REMARKS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance. The Examiner is thanked for indicating that the claims are free of the prior art.

I. STATUS OF CLAIMS AND FORMAL MATTERS

Claims 21-87 are under consideration in this application. Claims 59-88 are added. Support is found throughout the specification and from the original claims. No new matter is added by this amendment. No waiver of the applicability of the doctrine of equivalents is made or implied by this amendment.

It is submitted that the claims, herewith and as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. The amendments of and additions to the claims, as presented herein, are not made for purposes of patentability within the meaning of 35 U.S.C. §§§§ 101, 102, 103 or 112. Rather, these amendments and additions are made simply for clarification and to round out the scope of protection to which Applicants are entitled. Furthermore, it is explicitly stated that the herewith amendments should not give rise to any estoppel, as the herewith amendments are not narrowing amendments.

Objection to the Specification

The specification was objected to under 37 CFR 1.821(d) for not assigning each sequence a unique sequence identifier. To the extent that the herein amendments to the specification do not obviate the objection, it is traversed.

The Office Action alleges that pages 5-9 disclose two sequences under a single sequence identifier. Although two sequences, a nucleotide sequence and an amino acid sequence, are given on pages 5-9, the preceding sentence (page 5, line 3) states, "Such a coding region of an amino acid transporter is shown, for example, by one of the following nucleotide sequences:

1. Sequence (SEQ ID NO:1):" (Emphasis added.)

A person reading the application could read the preceding sentence, look at SEQ ID NO:1 in the sequence listing and know that the nucleotide sequence was the sequence referred to on page 5 of the application. It would be apparent to the reader that the amino acid sequence was provided simply as the translation of SEQ ID NO:1. The same is true on pages 9-14. Note that

Seq. ID No. 2 has been changed to SEQ ID NO:3 on page 9, line 16 (actual text count), to indicate the nucleotide sequence that is referred to on pages 9-14. Sequence identifiers have also been amended on pages 22 and 24 to reflect the correct SEQ ID NOs.

II. THE REJECTIONS UNDER 35 U.S.C. §112, 1ST PARAGRAPH ARE OVERCOME

Claims 21-28 and 31-58 were rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking adequate written description and enablement. The rejections are traversed and will be addressed together.

At the time of the invention (and still today) *Arabidopsis* served as a model plant. One of the inventors of the instant application, Dr. W. Frommer, is head of the Institute for Plant Physiology in Tübingen, Germany. From this institute, several research works have originated in recent years regarding amino acid transport in *Arabidopsis,* potato (Kwart, 1995), and tomato (Bock, 1998 and Borchers, 2000). Those works are highlighted in the enclosed German-language lists, and the full titles read:

1. Borchers, A., "Isolation and characterisation of amino acid transporters from *Arabidopsis thaliana* and *Lycopersicon esculentum*".

2. Bock, U., "Isolation and characterisation of amino acid transporters from *Lycopersicon esculentum*".

3. Kwart, M., "Studies on amino acid transport in *Arabidopsis thaliana* and *Solanum tuberosum*".

All of the aforementioned dissertations were supervised by Dr. Frommer, and demonstrate that amino acid transporters can be isolated from several plant species using the methods described in the instant application. English translations are not available at this time, however, a declaration under 37 CFR 1.132 by Dr. Frommer, attesting to the results of these studies, can be submitted in support of this argument.

In fact, Dr. Frommer was honored for his work on plant transporters in 1998, with the renowned "Gottfried-Wilhelm-Leibnitz Award", and in 2001 with the Körber Prize. Enclosed is a report of the Körber Prize, printed from the web site: http://www.stiftung.koerber.de/foerderung/koerber-preis/alle_projekte/2001/koerberpreis_2001.pdf; please note the highlighted passages on pages 19 and 27.

The instant specification provides proper written description and enablement for claim 1 of U.S. Patent No. 6,245,970, of which this application is a divisional and therefore, shares the same

specification, which reads: "An isolated DNA molecule comprising a nucleotide sequence encoding Arabidopsis amino acid transporter for membrane transport."

The pending claims in the instant application are directed to the fact that the mutant yeast complementation system described can be used to screen any plant genome for sequences encoding amino acid transporters. Thus, as is evident to the skilled artisan, instead of the cDNA of young germ lines of *Arabidopsis thaliana*, as taught in Example 1, the cDNAs or genomic DNAs of any other species may also be used. Example 1 is embodied in added claims 84 and 85. Accordingly, it is an advantage of the mutant yeast complementation system described by the Applicants that it is independent of the species from which the inserted DNA library fragments are derived. One of skill in the art could easily, without any undue experimentation, combine his own knowledge with the teachings of the application to identify isolated nucleic acid molecules encoding plant amino acid transporters, especially proline and histidine, e.g. those identified by the methods of claims 84 and 85 (as claimed in claims 86 and 87; see also claim 88). Accordingly, it is respectfully submitted that claims 53 and 84-88 are clearly described and enabled.

Claim 54 was rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking adequate written description because the yeast strains 22574d and JT16 are required to practice the claimed invention. These yeast strains were known in the art long before the filing date of the instant application. For example, strain 22574d was described by Jauniaux et al. in 1987, and strain JT16 was described by Tanaka & Fink in 1985 (see page 23, lines 14-18). One of skill in the art would know how, without undue experimentation, to follow the teachings found in these references to produce the yeast mutants.

In summary, amino acid transporters have been isolated from several plant species, and how to do so is taught in the specification. SEQ ID NOs:1 and 3 are presented as examples of mucleic acid molecules that can be isolated and identified using the methods taught in the application, however, they do not represent the sum total of molecules contemplated by the invention, and described and enabled by the application. In addition, Applicants should be entitled to claims to a genus, as they have taught more than one species of the genus and methods for obtaining additional members of the genus. Therefore, claims to only sequences isolated from *Arabidopsis* or to SEQ ID NOs:1 and 3, would very severely and very unfairly limit the scope of claims to only that which the Applicants exemplified.

It is believed that the full scope of the claims meets the written description and enablement requirements of 35 U.S.C. §112, first paragraph. Accordingly, reconsideration and withdrawal of the rejections are requested.

III. THE DOUBLE-PATENTING REJECTION IS ADDRESSED

Claims 21-28 and 31-58 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-22 of U.S. Patent No. 5,719,043. Claims 21-28 and 31-58 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-25 of U.S. Patent No. 6,245,970.

The issue of whether there is indeed double patenting is contingent upon whether the claims of the current application are indeed allowed. If, upon agreement as to allowable subject matter, it is believed that there is still a double patenting issue, the necessary Terminal Disclaimer(s) will be filed at that time. Accordingly, it is requested that the double patenting rejection be held in abeyance until agreement is reached as to allowable subject matter.

REQUEST FOR INTERVIEW

If any issue remains as an impediment to allowance, an interview is respectfully requested prior to issuance of any paper other than a Notice of Allowance. The Examiner is requested to telephonically contact the undersigned to arrange a mutually convenient time and manner for the interview. The Examiner is also invited to telephonically contact the undersigned if there are any minor, formal issues that need resolving prior to issuance of a Notice of Allowance, with a view towards resolving such minor, formal issues via telephonic interview.

CONCLUSION

In view of the amendments and remarks herewith, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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